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Pitfalls in Diagnosis of Occupational Lung Disease for Purposes of Compensation - One Physician's Perspective

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PITFALLS IN DIAGNOSIS OF OCCUPATIONAL LUNG DISEASE FOR PURPOSES OF COMPENSATION—ONE PHYSICIAN'S PERSPECTIVE

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ABBREVIATIONS

CO	carbon monoxide
COPD	chronic obstructive pulmonary disease
DLCO	diffusing capacity for carbon monoxide
$FEF_{25-75\%}$	forced expiratory flow between 25 % and 75 % of the vital capacity
FEV-1	forced expiratory volume in one second
FVC	forced vital capacity
ILD	interstitial lung disease
MVV	maximal voluntary ventilation
OA	occupational asthma
OLD	occupational lung disease

I. SUMMARY

Occupational caused lung disease (OLD) is almost always compensable, either by application to workers' compensation agencies or by a civil lawsuit. For this reason the diagnosis usually comes under close scrutiny. Several pitfalls can occur when a physician diagnoses a patient as having lung disease of occupational origin, especially when compensation is at issue. These pitfalls can trap both the attorney advocate and his client, and lead to a result opposite of that intended (*e.g.*, the claim one supports can be denied). For purposes of discussion I have categorized the pitfalls as follows:

A. Making an unsupported medical diagnosis (looking for a "quick fix").
B. Echoing an unsupported diagnosis made by someone else.
C. Inadequate clarification of 'impairment' and 'disability.'
D. Ignoring or minimizing relevant medical history.
E. Arguing against yourself.
F. Ignoring the possibility of a rare or unusual diagnosis.
G. Not obtaining or reviewing independent chest x-rays and reports.
H. Attributing causation with certainty when it is unwarranted by the facts.
I. Relying on a claimant's own smoking history.
J. Misinterpreting pulmonary function and arterial blood gas tests
K. Missing the real cause of a patient's complaint.
L. Diagnosing occupational lung disease without attempting to remove the patient from the cause.
M. Confusion over basic terminology and pathophysiology in OLD.
N. Using sloppy or incorrect language, including misspelling.
O. Not saying "I don't know," when you don't know.

Pitfalls in diagnosis generally arise from either physician bias or inadequate evaluation. Although most pitfalls seem to be made by physicians on the plaintiff's side, they are also made by physicians on the defendant's side, as when bias interferes with recognizing a condition that is occupational in origin.

Ideally, the fact that diagnosis of OLD involves the legal profession should not affect a physician's objectivity or clinical approach. Physicians have an obligation to help assure that deserving patients receive compensation, and that claimants without a compensable occupational illness are not unjustly rewarded. However, the attorney's need to prove a diagnosis "with medical certainty," and the defendant's need to refute that diagnosis with equal certainty, often skew what would otherwise be a straightforward diagnostic process. Resulting pitfalls in diagnosis can, in the end, trap the physician advocate and the side he is trying to help.

II. INTRODUCTION

Pulmonary physicians routinely encounter patients seeking monetary compensation for occupational lung disease (OLD). The claims cover a variety of problems, including asbestos-related diseases, silicosis, occupational asthma, coal worker's pneumoconiosis, berylliosis, industrial bronchitis and many others. Most occupational claims are handled in one of two venues: 1) by a Workers' Compensation agency, for compensation of work-related illness or injury, or 2) in a civil suit, for damages against an employer or other culpable business.[2]

Under workers' compensation laws the amount awarded by a Workers' Compensation agency is determined by a fixed schedule that is based on the worker's wages and degree of impairment. Claims are adjudicated by lay administrators, with physician input via written reports. The complexity of pursuing a claim to resolution usually mandates the need for legal counsel. Several law firms specializing in "Workers' Comp." can be found in any large city. The claimant's attorney receives a percentage of any lump sum awarded.

In contrast to the 'no-fault' nature of workers' compensation statutes, the plaintiff in civil suit must convince a jury that he or she was injured because of some action or negligence by the employer or other business (*e.g.*, a supplier of asbestos materials). The legal theories raised in a civil suit are usually those of products liability or negligence.[3] Compensation is awarded by the jury, whose decision is in part based on physician testimony given either live or via video deposition.

Because of the potential for some type of compensation, the diagnosis of OLD frequently has non-medical ramifications. Through the 1970s, ninety

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[2]L. Christine Oliver, *Occupational and Environmental Asthma*, 98 CHEST 220S, 221S-222S (1990); Stephen I. Richman, *Compensating Victims of Occupational Lung Disease: The Physician's Role in the System*, 31 J. OCCUP. MED. 335 (1989) [hereinafter Richman, *Compensating*].

[3]Oliver, *supra* note 2, at 222S.

percent of respiratory claims were litigated.[4] The percentage is probably as high, if not higher, in the 1990s. Thus, an OLD diagnosis will likely be scrutinized by many others, including administrators, lawyers, and physicians who have never seen the patient. A diagnosis that may seem straightforward clinically can become extremely controversial when someone is asked to actually *pay* for it.

For example, "asbestosis" in an asymptomatic individual signifies certain chest x-ray abnormalities for which no therapy is warranted. From a strictly medical standpoint, since the person has no symptoms, the diagnosis may have no impact whatsoever on his lifestyle or longevity. However, because the diagnosis implies occupational causation, it frequently (if not invariably) leads to a legal claim and all that it entails: other medical evaluations, more chest x-rays, tests of pulmonary function, administrative hearings, depositions, etc. By the time of trial the claimant may have developed "symptoms" of shortness of breath and be able to honestly testify how worried he is of developing lung cancer or some other serious respiratory problem.

Similarly, the adjective "occupational" attached to a diagnosis of asthma can open up a Pandora's box of claims, counterclaims and, often, a lawsuit. As with asbestosis, harm can come both to the patient and to the defending business, assuming a claim is filed, if the diagnosis is sloppy or incorrect.

Given the adversarial consequences of most OLD claims, several pitfalls can trap the physician who takes a position (and, by extension, the claimant or defendant and the respective attorney). In this article 'pitfall' is used to denote some statement or conclusion, oral or written, about the diagnosis that should not have been made because it is incorrect, improper or unwarranted by the facts. I will not discuss any specific *legal* pitfalls, since that subject is outside my area of expertise.

Diagnostic pitfalls can occur in: conversations with patients; office or chart notes; letters to the plaintiff's attorney; reports to independent agencies (*e.g.*, Bureau of Workers' Compensation); and sworn testimony.

The following examples include pitfalls by both office practitioners and academic physicians; the latter include statements from board-certified pulmonary specialists (pulmonologists) and nationally-recognized experts in some aspect of occupational lung disease. The cases cited originated in Ohio but the physicians quoted are from several states, including Ohio. All names have been deleted or changed for obvious reasons.

III. PITFALLS

A. Making an unsupported medical diagnosis (looking for a "quick fix")

Settlement of an occupational lung disease claim takes time. The treating physician may want to oblige his or her patient by making a quick,

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[4]Stephen I. Richman, *Why Change? A Look at the Current System of Disability Determination and Workers' Compensation for Occupational Lung Disease*, 98 ANN. INT. MED. 908, 909 (1982) [hereinafter Richman, *Change*].

unsupported, diagnosis in the chart or in a letter to plaintiff's attorney. Although an unsupported diagnosis may help initiate a claim it will only get in the way if the claim is contested. For example: A 56 year-old man with a long smoking history was being treated for exacerbation of chronic obstructive pulmonary disease (COPD). Noting that the patient "works in a foundry," his family physician wrote in the chart: "Dx. COPD - occupational asthma." A worker's compensation claim was filed, supported solely by the physician's statement (reiterated on the claim form without any supporting information). Ultimately the claim was disallowed, but only after two years of legal wrangling and after several experts had independently evaluated the patient.

If the treating physician cannot be the patient's advocate all the way through a claim, the patient should be referred to someone who can. The above claim might not have been filed had the treating physician initially referred the patient to a specialist.

The "quick fix" pitfall sometimes occurs when the claimant's physician is asked by an attorney to certify OLD "so Mr. C. can pursue his claim." Even though the physician never considered OLD in Mr. C., he feels an obligation to help and, with some prompting by the attorney, writes: "It is more probable than not that my patient, Mr. C, has occupational asthma." If uncontested, such a statement may be all that is needed to pursue a scheduled award. If contested, however, the following facts will emerge: (1) the doctor is not an expert in the field; (2) he has treated the patient on numerous occasions but never made any connection between asthma symptoms and OLD before the claim; and (3) his *first* mention of OLD appears in his letter to the claimant's attorney. The result in such a situation is usually nullification of the treating doctor's testimony and delay in resolving the patient's claim.

This type of pitfall also occurs when a physician is hired specifically to certify a diagnosis in multiple claimants with similar exposure history. To save time the physician may adopt a "uniform" approach, in which every letter reads the same, irrespective of the specific facts of the case. Here is one such instance.

A large number of ex-foundry workers were sent to one physician to certify that they had OLD from remote foundry work. Since most of the workers had no lung disease of any type, certification required the creation of a quick-fix diagnosis. Thus, every letter from the physician included the following boilerplate statement, irrespective of the evidence: "His symptoms, clinical examination, employment history, and chest x-rays are consistent with the diagnosis of Asbestosis and or Asbestos exposure-related disease." In fact, in almost every case nothing about the patients' exams, test results or chest x-rays were consistent with the stated diagnoses. Each claim was rejected at the administrative level due to the lack of evidence to support the occupational diagnoses. When a few of these cases were adjudicated in the courts, the identical nature of the letters harmed the physician's credibility.

B. Echoing an unsupported diagnosis made by someone else

Many diagnoses appear on a patient's chart without adequate documentation, only to have the unsubstantiated diagnosis repeated over and over throughout the patient's clinical record. A typical illustration was seen in the following case: A patient with COPD had a brief history of foundry work. His physician wrote "R/O asbestosis" on a chest x-ray request form. A

radiologist read the film as: ". . . Severe COPD . . . some fibrotic streaks not typical of asbestosis but cannot rule out that diagnosis." The patient was later hospitalized and at some point "R/O asbestosis" simply became "asbestosis" in the hospital chart. This unsubstantiated diagnosis was echoed by numerous other physicians and listed along with "COPD," "Cor Pulmonale" and, ultimately, "Respiratory Failure." The patient died of COPD-related respiratory failure. No autopsy was performed. A claim was made for asbestosis as the cause of death. Repetition of the incorrect diagnosis in the hospital chart gave the impression that asbestosis had been established. Review of the records showed the diagnosis traceable to the single radiology report. There was never any radiologic or other evidence for asbestosis.

A form of "ECHO" diagnosis also occurs when a patient receives compensation for a disease not evident by the usual medical criteria. For example, the medical and legal criteria for coal worker's pneumoconiosis are different.[5] Under the 1969 Federal Coal Mine Health and Safety Act,[6] many coal workers met criteria for compensation only because they smoked cigarettes or had non-respiratory disability such as heart disease, hypertension or obesity.[7] The result is that many ex-miners hospitalized for exacerbation of COPD - with clear lung fields on chest x-ray - are erroneously noted throughout the chart as having "coal worker's pneumoconiosis." This type of ECHO diagnosis fosters confusion about terminology and clinical causation.

C. Inadequate clarification of 'impairment' and 'disability'

Impairment is purely a medical condition, such as loss of physiologic function or anatomic loss, *e.g.* percent decrease in FEV-1 or loss of a limb. Disability is a broader term, meaning overall effect of impairment on the individual and his or her ability to work and function in society.[8] A worker with respiratory *impairment* may or may not be *disabled* for a particular job. By virtue of factors such as age, sex, education and socioeconomic status, two workers with identical impairment may have varying degrees of disability.[9]

Notwithstanding the accepted definitions, the two terms are often used interchangeably and have at times generated much confusion.[10] The physician

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[5]Richman, *Compensating supra* note 2 at 336; Richman, *Change supra* note 4 at 910. *See also* J.E. Hansen & K. Wasserman, *Disability Evaluation*, in TEXTBOOK OF RESPIRATORY MEDICINE (J. Murray & J. Nodel eds. 1988).

[6]W. Keith Morgan et al., *Respiratory Disability in Coal Miners*, 243 JAMA 2401-04 (1980). (See also editorial by Barclay WR, 243 JAMA 2427 (1980).

[7]W. Keith Morgan, *Legal Aspects of Industrial Disease*, in OCCUPATIONAL LUNG DISEASE (3d ed. 1995).

[8]American Thoracic Society, *Evaluation of Impairment/Disability Secondary to Respiratory Disorders*, 133 AM. REV. RESP. DIS. 1205 (1986).

[9]*Id.*

[10]Stephen I. Richman, *Meanings of Impairment and Disability. The Conflicting Social Objectives Underlying the Confusion*, 78 CHEST 367 (1980).

should not be faulted for using one term when he or she means the other. Rather, the pitfall comes from using either term as a substitute for clearly stating the worker's limitation or characterizing the patient's impairment/disability in some useful fashion.

A physician evaluating a patient for "percentage of disability" found the FEV-1 approximately 15% below predicted. He wrote that the patient had "15% impairment of the body as a whole," implying a modest degree of fixed impairment and therefore disability. However, he did not address the fact that the patient: (1) was taking daily bronchodilator medication, without which the FEV-1 would likely have been much lower; (2) had much worse lung function during exacerbations, as documented in emergency department records; and (3) was completely disabled for gainful employment because of airway hyper-responsiveness and lack of any skill outside the dusty trades. The physician substituted a precise but limited statement on impairment for a fuller characterization of the patient's true disability.

A related pitfall is stating a percentage of impairment of disability on an arbitrary basis. Workers' compensation agencies frequently ask for 'the amount of disability stated in a definite percentage.' Physicians evaluating pulmonary disorders can use lung function tests (FEV-1, FVC, diffusing capacity), resting arterial blood gases and/or exercise test results as a guide.[11] Alternatively, the degree of bronchial hyper-responsiveness and/or the documented minimal amount of medications necessary to control asthma symptoms can be used.[12] Some physicians, unfortunately, seem to just pull a percentage out of 'thin air.'

A patient was evaluated by two different physicians a month apart. Each had access to the same data. One physician found the claimant to have "20% permanent partial disability." The other found "80% permanent partial disability." Neither physician explained the stated percentage and the patient's clinical status was unchanged in the interval.

Similarly, after evaluating a patient with chronic rhinitis who also had some history of occupational dust exposure, an otolaryngologist wrote: ". . . it is reasonable to assume that a component of her nasal problems is due to her occupational exposure . . . it is, in reality, a multifactorial problem . . . I feel the chronic irritative environmental exposure would account for 60-70% of her nasal symptoms." The physician provided no explanation as to how he arrived at "60-70%."

D. Ignoring or minimizing relevant medical history

Ignoring or minimizing relevant medical history is perhaps the most common pitfall. Medical history that would be prominent in a routine clinical presentation is often ignored in an occupational claim. For example: A patient alleging silicosis had a documented history of congestive heart failure (CHF),

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[11] American Thoracic Society, *supra* note 8 at 1205-1206.

[12] Moira Chan-Yeung, *Evaluation of Impairment/Disability in Patients with Occupational Asthma*, 135 AM. REV. RESP. DIS. 950, 951 (1987).

with CHF-related pleural effusions. She used three different cardiac medications. Her chest x-ray showed cardiomegaly with some vascular redistribution of blood flow typical of CHF, and nothing to suggest pneumoconiosis. The physician evaluating her as an outpatient, on the question of OLD, read her chest x-ray as showing "interstitial disease" and concluded she had "silicosis." In an otherwise detailed report the physician made no mention of her cardiac history. Medical history that *appears* in a physician's treatment records often *disappears* when that same physician is asked to certify an occupational illness.

A physician at a tertiary referral center saw a 38-year-old female patient in 1983 for what he noted in the chart to be "shortness of breath and chronic nonproductive cough x 2 yrs. . ." Similar complaints had been recorded by other physicians. No specific diagnosis was made and the patient was lost to follow-up. Between April 1984 and February 1987 the patient worked for Company X soldering computer boards. During this period her cough continued, on occasion exacerbated by exposure to epoxy fumes. Two methacholine challenge tests were normal and at no time did she manifest airway obstruction or wheezing. Her complaints continued after leaving the company, without any objective evidence for asthma. After re-evaluating the patient in 1989 this same physician wrote to her attorney that the diagnosis was "asthmatic bronchitis . . . of occupational origin" from work at Company X. He made no mention of having evaluated her for identical symptoms in 1983, before she ever started working for the company.

Selective reporting is particularly common regarding smoking history. I have encountered several situations where patients were diagnosed as having occupationally induced chronic obstructive lung disease with *no mention* made of an extensive smoking history.

In September 1987 a 55-year-old man was hospitalized for what his physician noted in the chart as: "Exacerbation of chronic obstructive pulmonary disease . . . He has a 30 year history of smoking and quit two or so years prior to this admission." The patient had worked in a paper mill for several years and lately had become bothered by fumes at work. After discharge from the hospital an occupational claim was made. In October 1987, the same physician completed a Workers' Compensation 'Statement of Occupational Disease' form for his patient. Under "What is the Diagnosis?" the physician wrote: "occupational asthma; chronic bronchitis, COPD." Under "What in your opinion is the cause of the disease?" the physician wrote "allergen at work." No mention was made of the smoking history, or of how an "allergen" might have caused the COPD.

E. Arguing against yourself

Presenting arguments in direct conflict with previously issued conclusions is a rare pitfall, but one that can trap the unwary expert.

A 59-year-old man died in 1985 of pulmonary fibrosis. He had a documented history of extensive work exposure to asbestos during the 1960s and 1970s. Pulmonary fibrosis first became manifest in 1975, in a pattern typical of asbestosis. The autopsy revealed extensive pulmonary fibrosis and at least one asbestos body per high power field. The patient's employer, who was sued on the claim of asbestosis, stated through experts that the claimant died of

"idiopathic pulmonary fibrosis." In 1988 the company's pathology expert wrote that he found "A single ferruginous body, possibly an asbestos body was demonstrated [but] the overall [histologic] pattern is that of an end stage lung with fibrosis of a nonspecific nature . . . on the basis of the evidence I do not consider this disease process to be asbestosis. . . . the pulmonary disease should be placed in the category of idiopathic pulmonary fibrosis . . . [the diagnosis] is . . . clearly . . . not . . . asbestosis."

This same expert had previously published, in a specialty medical journal (statement paraphrased): 'asbestos bodies are not always observable because they are cleared from the lung and undergo dissolution with time, and therefore particle counts do not correlate directly with the severity of pulmonary parenchymal disease.'

The pitfall in this case was the expert's conclusion, directly contrary to his own published work, as well as others,[13] that the available data indicated a diagnosis 'clearly not asbestosis.' Unchallenged, such a statement would seem to be conclusive. Critically challenged, principally by citing his own published work, defendant's expert appears highly biased. One wonders what this expert would have written had he been retained by the *plaintiff's* attorney.

F. Ignoring the possibility of a rare or unusual diagnosis

Sometimes an obvious, but rarely reported, diagnosis is simply ignored, as in the following case. A 59-year old man developed pneumoconiosis from close exposure to mica while working for a gun shell manufacturer between 1975 and 1982. Prior to this job he had no respiratory history and was a non-smoker. Chest x-ray showed bilateral interstitial nodular infiltrates consistent with pneumoconiosis (lung scarring from inhaled dusts, such as asbestos and silica). Pulmonary function studies showed moderate to severe restrictive impairment; after three minutes of treadmill exercise his oxygen saturation fell from 98% to 87%. An open lung biopsy in 1983 showed "severe interstitial fibrosis [with] honeycomb lung . . . no asbestos body is identified." Electron microscopic analysis of the lung tissue revealed "elemental composition of aluminum, potassium, and silicon [as] found in mineral silicates, commonly referred to as mica." Thus, the diagnosis was unequivocal mica pneumoconiosis, of which a few cases had been reported up to that time.[14] Despite this evidence, a prominent expert hired by the company wrote in October 1984: "Although [the patient's] history would appear to clearly indicate a significant degree of mica dust work exposure, I must say that from my own years of experience as a lung specialist, his physical and x-ray findings are to me classically those of a non-occupational work problem which is

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[13] Andrew Churg, *Nonneoplastic Asbestos-Induced Disease*, 53 MT. SINAI J. MED. 409, 410 (1986).

[14] J. Cortez Pimentel & A. Piexoto Menezes, *Pulmonary and Hepatic Granulomatous Disorders Due to the Inhalation of Cement and Mica Dusts*, 33 THORAX 219 (1978). *See also* Cotton D. Davies, *Mica Pneumoconiosis*, 40 BRIT. J. IND. MED. 22 (1983).

defined by some as idiopathic pulmonary fibrosis . . . This non-occupational condition has caused a marked degree of impairment of [his] lung function and does limit his present work ability . . ."

Taking advantage of the relative rarity of pure mica pneumoconiosis, this expert attempted to use his own prominence to refute an obvious case of occupationally-related interstitial fibrosis. An article appeared the following year reporting 66 cases of apparent mica pneumoconiosis; the authors found causation by mica exposure alone reasonably convincing in 26 of the cases.[15] The expert compounded his mistake by claiming that the alternative diagnosis, idiopathic pulmonary fibrosis (IPF), is "classically" characterized by certain "physical and x-ray findings," yet the literature available at the time strongly emphasized the non-specificity of these findings.[16]

Along the same line, some experts erroneously rule out the possibility of occupational asthma (OA) because no familiar causative compound is identified. Concerning one patient with classic symptoms of OA who worked around several identified chemicals, an expert wrote: "I know of nothing this patient was exposed to that can cause asthma." Over 200 chemicals and compounds have been know to cause occupational asthma[17] and the list grows yearly.[18] In many cases a specific sensitizing agent cannot be identified.[19] For the individual patient, finding a specific agent is less important than documenting temporal changes in lung function that implicate some causal factor from which the patient can be removed.[20]

G. Not obtaining or reviewing independent chest x-rays and reports

The vast majority of physicians rely on independent radiologists to take and interpret chest x-rays on their patients. However, some non-radiology trained physicians operate x-ray machines in their offices and then formally interpret the claimant's chest x-ray. This practice can lead to over-interpretation.

In a letter to an attorney a pulmonologist formally interpreted his patient's outpatient chest x-ray as showing interstitial lung disease from pneumoconiosis. There was no interpretation by a radiologist. During that

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[15]Knut R. Skulberg et al., *Mica Pneumoconiosis-A Literature Review*, 11 SCAND. J. WORK ENVIRON. HEALTH 65, 72 (1985).

[16]Ronald G. Crystal et al., *Interstitial Lung Diseases of Unknown Cause*, 310 NEW ENG. J. MED. 154, 155 (1984).

[17]Moira Chan-Yeung & Steven Lam, *Occupational Asthma*, 133 AM. REV. RESP. DIS. 686 (1986); Moira Chan-Yeung, *Occupational Asthma*, 98 CHEST 148S, 150S-152S (1990); Dorsett D. Smith, *Medical-Legal Definition of Occupational Asthma*, 98 CHEST 1007 (1990).

[18]Mark R. Cullen et al., *Occupational Medicine*, 322 NEW ENG. J. MED. 594, 595-598 (1990).

[19]Smith, *supra* note 17.

[20]Cullen, *supra* note 18 at 596.

same year the claimant had other chest x-rays while hospitalized. All were read as normal by independent radiologists ignorant of the occupational claim.

Sometimes a chest x-ray already interpreted by a hospital-based radiologist will be reinterpreted without reference to the radiologist's report. Certainly there can be honest differences of opinion. More often, however, the 're-interpreter' has simply ignored the radiology report rather than disagreed with it.

A 70-year-old man with severe COPD had a series of chest x-rays taken over five years. All films were read, by various radiologists, as consistent with bullous emphysema, a non-occupational lung disease. A few "fibrotic streaks" were noted and commented on as consistent with bullous emphysema. No mention was made in the radiology reports of interstitial lung disease (ILD), OLD, or pneumoconiosis. Furthermore, no mention was made in the clinician's brief history, provided on the x-ray request forms, of any ILD or occupational lung concern. A pulmonary expert was asked by the claimant's attorney to evaluate the patient and all his chest x-rays. The physician wrote the attorney that the "chest x-rays are indicative of interstitial fibrosis and [occupationally-related] pneumoconiosis." The physician made no mention of the formal radiology reports or of any difference of opinion he had with the radiologists' interpretations.

Often a "B-reader" will be hired by plaintiff's attorney to "prove" a patient has pneumoconiosis. A B-reader is a physician (not necessarily a radiologist) who has taken a course on reading pneumoconiosis chest x-rays according to the standards of the International Labor Organization (ILO), and passed a timed x-ray interpretation test. Since interpretation of all x-ray films is partly subjective, it may be difficult to argue with an opinion of "minimal" pneumoconiosis (1/1 or 1/0 on the ILO scale). However, if a B-reader ignores extant x-rays reports he might enter a pitfall as did the radiologist and pulmonologist in the following case.

On March 4, Dr. W., a B-reader, interpreted a PA and lateral chest x-ray as showing interstitial lung disease of profusion 1/1, consistent with occupational pneumoconiosis. Based on this interpretation, a pulmonologist wrote plaintiff's attorney a letter stating the patient had asbestosis. However, both the radiologist and the pulmonologist ignored records readily available in their own hospital, which included 15 prior chest x-rays and 3 chest CT scans. None of the prior x-rays or CT scans were interpreted as showing any interstitial lung disease. This meant that the condition was unequivocally non-existent. However, more damaging to the plaintiff's case was the fact that one of the earlier chest x-rays and one of the chest CT scans had actually been interpreted as negative *by the same B-reader expert - Dr. W.*

H. Attributing causation with certainty when it is unwarranted by the facts

A 'certain' diagnosis made in some cases can be shot down by a simple look at the facts: A physician stated that his patient's severe emphysema was caused by work as a garage mechanic. The patient was a heavy smoker and had no history of specific occupational illness (*i.e.*, no history of occupational asthma, nor pneumoconiosis.) A review of the medical literature found no evidence whatsoever for association of emphysema with low level exposure to garage fumes.

This example is easier to analyze than situations where there is more than one known cause for a disease. A good case in point is the causation of lung cancer when a patient is a heavy cigarette smoker and also exposed to asbestos. Enterline has written that no opinion about the tumor's etiology can be certain, and that to attribute the lung cancer to asbestos with certainty would mean that asbestos exposure blocked the possible effects of all other cancer causing agents, a scientifically untenable position.[21] Rather than reach an unwarranted conclusion 'with certainty,' the physician could point out the multi-factorial causation and venture a probability for each factor (based on smoking history, asbestos exposure history, etc.).[22] The pitfall is in trying to mold an uncertain situation into a statement that, in order to become legally acceptable, becomes medically invalid.

An example of a medically invalid statement was prepared by an oncologist who had treated lung cancer in a 69-year-old man with a history of heavy smoking.

Over several months of chemotherapy, the oncologist made no mention in numerous letters and chart notes of asbestos as a cause of his patient's lung cancer, instead attributing the cancer solely to cigarette smoking. Two years after the patient died, the plaintiff's attorney asked the oncologist to write a letter about causation of the cancer in light of "new" information, supplied by the attorney, that the patient had been continuously exposed to asbestos in his job as an automobile service manager. Without any corroborating evidence of actual asbestos exposure, and despite the fact that the patient never had any asbestos-related disease, the physician obliged, writing the attorney: "There is a large body of knowledge relating to the health risks of both asbestos and cigarette smoking because of the economic implications of these carcinogens. It is certainly within reasonable medical probability that both of these carcinogens [cigarettes and asbestos] played a part in Mr. X's disease."

This "quick fix" attempt by the oncologist (Pitfall 1) failed because it was based on undocumented asbestos exposure information, and also because the conclusion was medically incorrect. There must be confirmation of some asbestos related pathology to implicate the mineral as a cause of lung cancer.[23]

Another variation of the 'certainty' pitfall occurs when physicians state that an occupational illness "substantially accelerated a patient's death" when there were many causes, including natural aging. It is not uncommon to see "substantial acceleration" of death claimed for patients who died *after age* 75, and of medical problems unrelated to their occupation. Notwithstanding the

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[21] Philip Enterline, *Attributability in the Face of Uncertainty*, 78 CHEST 377 (1980).

[22] *Id.*

[23] Kevin Browne, *Is Asbestos or Asbestosis the Cause of the Increased Risk of Lung Cancer in Asbestos Workers?*, 43 BRIT. J. IND. MED. 145, 147 (1986). Janet M. Hughs & Hans Weill, *Asbestos as a Precursor of Asbestos Related Lung Cancer: Results of a Prospective Morality Study*, 48 BRIT. J. IND. MED. 229, 232 (1991). *See also* A. Gibbs, *Pathological Reactions of a Lung to Dust*, in OCCUPATIONAL LUNG DISEASE, 151-152 (3d ed. 1995).

medical facts in such a case, can physicians credibly claim "substantial acceleration of death" when a patient lives well beyond his life-expectancy?

I. Relying on a claimant's own smoking history

Many OLD claimants say they don't smoke. In our lab we routinely do co-oximetry on all arterial blood gases, and this test includes measurement of blood carbon monoxide.[24] Carbon monoxide (CO) is elevated in the blood of all current cigarette and cigar smokers, usually to a level between 5% and 10% (in non-smokers it is less 2.5%). On many occasions CO is elevated in professed "non-smokers," indicating current smoking (the half-life of CO in the blood is about six hours, meaning it will return to normal levels in about 24 hours). When the claimant is confronted with this laboratory information he or she will often revise the history and admit to "smoking some, but not as much as before." If arterial blood gas measurements are not done (the test requires a sample of arterial blood), a CO level can be checked in a venous blood sample, or even in a sample of air exhaled by the claimant.

A variation of this pitfall is relying on a standard questionnaire instead of interviewing the claimant or reviewing available medical records. One physician wrote in his report that the claimant was a "life-long non-smoker," and based this statement on negative answers to simple "yes" or "no" questions the claimant made on an occupational history questionnaire. Yet this claimant, who had been previously examined numerous times by other physicians for a chronic heart condition, had a clear history of smoking heavily in the past, and would probably have admitted this history had he been asked directly. The expert's erroneous assertion about the smoking history undermined his testimony when the claim came to trial.

The importance of an accurate smoking history is obvious. Many conditions claimed to be occupational in origin are instead more likely to occur, or be aggravated from, smoking.

J. Misinterpreting pulmonary function and arterial blood gas tests

Pulmonary function tests are standard tests of lung function performed in most hospitals and in many physicians offices. They require the subject to blow forcefully through a tube, plus perform other maneuvers that can give valuable information about lung function. Arterial blood gas measurements are done on a sample of arterial blood, and checked for the patient's level of oxygenation, among other parameters. The results of these tests are interpreted as to both the existence and type of abnormality by a physician with specialized training (usually a pulmonologist). Frequently, however, in cases reviewed for compensation the test results are misinterpreted. Four common errors include:

a) interpreting a low diffusing capacity (DLCO) as indicative of diffusion impairment without accounting for the

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[24] LAWRENCE MARTIN, ALL YOU REALLY NEED TO KNOW TO INTERPRET BLOOD GASES (1992).

patient's hematocrit or carbon monoxide level (both can affect the DLCO.)[25]

b) interpreting improvement in either $FEF_{25-75\%}$ or maximal voluntary ventilation (MVV), after inhaled bronchodilator, as indicative of hyper-reactive airways disease or asthma ($FEF_{25-75\%}$ is too sensitive a measurement to gauge bronchial hyperresponsiveness; also, sequential $FEF_{25-75\%}$ measurements must be made at the same lung volume for valid comparison.[26] MVV is effort-dependent and bears a fixed relationship to FEV-1;[27] if MVV improves without concomitant change in FEV-1 the patient's initial test likely reflected suboptimal effort.)

c) equating an abnormal methacholine challenge response with a diagnosis of asthma. A drop in FEV-1 of 20% after inhaling methacholine indicates only airway hyperresponsiveness, which can be found in many other conditions.[28]

d) interpreting a low resting PaO2 as indicative of "diffusion block" and therefore interstitial lung disease; pure diffusion impairment is rare and does not cause significant reduction of resting PaO2.[29]

K. Missing the real cause of a patient's complaint

Physicians who evaluate patients for a third party (lawyer or government agency) do not have a true doctor-patient relationship. For example, there is no obligation to treat and/or follow-up on the patient's problem. However, physicians do have an obligation, ethical or moral, to help the patient medically if that is possible at the time of evaluation.

A 46-year-old woman filed a Workers' Compensation claim for "industrial bronchitis." Her main symptom was chronic cough for a year. She had worked as an assembler of motors and claimed that dust and fumes in the factory caused her problem. She was using oral theophylline plus both a beta-adrenergic and a steroid inhaler, all without apparent benefit. A physician

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[25] GREG RUPPEL, MANUAL OF PULMONARY FUNCTION TEST (1991).

[26] *Id.*

[27] *Id.*

[28] Philip K. Pattenmore et al., *The Interrelationship Among Bronchial Heperresponsiveness, the Diagnosis of Asthma and Asthma Symptoms*, 142 AM. REV. RESP. DIS. 549, 550 (1990); K. Yan et al., *Prevalence and Nature of Bronchial Heperresponsiveness in Subjects with Chronic Obstructive Pulmonary Disease*, 132 AM. REV. RESP. DIS. 25, 28 (1985); E. Helen Ramsdale et al., *Bronchial Responsiveness to Methacholine in Chronic Bronchitis: Relationship to Airflow Obstruction and Cold Air Responsiveness*, 39 THORAX 912, 916 (1984).

[29] DAVID V. BATES, RESPIRATORY FUNCTION IN DISEASE (3d ed. 1989).

was asked to evaluate her "on the claim of industrial bronchitis." Based on her symptoms (chronic cough, post nasal drip) the physician suspected chronic sinusitis; sinus x-rays confirmed bilateral maxillary sinusitis with air fluid levels. She was referred to an otolaryngologist.

Although the physician was only asked to evaluate the claim of industrial bronchitis, that clearly was not the cause of her cough. One does not have to become a treating physician to make the correct diagnosis or steer the claimant in the direction of proper therapy.

Along the same line, physicians should encourage any patient they see, no matter what the referral source, to quit smoking. I have seen numerous OLD claimants who still smoke. Without a trace of irony, many of them opined that their cough or shortness of breath was solely related to prior occupational exposure. Physicians should use the opportunity to remind claimants that, irrespective of the merits of their claim, cigarettes are harming their health and may be causing their symptoms.

L. Diagnosing occupational lung disease without attempting to remove the patient from the cause

Physicians also have an obligation to help remove workers from harmful environments. It may not be feasible (for economic and other reasons) to relocate the patient, but every attempt should be made to remove him or her from the offending agent(s).[30] Workers cannot rely on respirators and face masks to prevent further inhalation damage. One death has been reported in a patient with documented toluene diisocyante asthma who continued to work with the compound.[31] Studies of patients with occupational asthma who remain in the same industry show that they either do not recover or continue to deteriorate.[32] If a physician suspects OLD, steps should be taken to remove the patient from the cause.

M. Confusion over basic terminology and pathophysiology in OLD

There are many controversies in the field of OLD. This pitfall refers to statements which are factually incorrect, i.e., not considered a matter of opinion. Among the more common misstatements made by physicians:

a) 'continued asthma symptoms after a patient has left the workplace rules out occupationally caused asthma' [not true;].[33]

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[30]Chan-Yeung, *Chest supra*, note 17 at 156S; James A. Merchant, *Priorities for the Management of Environmental and Occupation Asthma*, 98 CHEST 146S (1990).

[31]L. M. Fabbri et al., *Fatal Asthma in a Subject Sensitized to Toluene Diisocynate*, 137 AM. REV. RESP. DIS. 1494, 1495 (1988).

[32]Chan-Yeung, *Chest supra*, note 17 at 155S.

[33]*Id.* at 1545; Moira Chan-Yeung et al., *Clinical Features and Natural History of Occupational Asthma Due to Western Red Cedar (Thuja Plicata)*, 72 AM. J. MED. 411, 413 (1982); David R. Moller et al., *Chronic Asthma Due to Toluene Diisocynate*, 90 CHEST 494,

b) 'absence of prior sensitization rules out occupational asthma' (i.e., reversible airways obstruction with bronchial hyperresponsiveness) [not true;].[34]

c) 'blood eosinophilia in asthma is specific for allergy' [not true;].[35]

d) 'antibody to an inhaled compound (*e.g.*, trimellitic acid) is diagnostic of occupational asthma from that compound' [not true;].[36]

e) 'the presence of pleural thickening or pleural plaques on the chest x-ray indicates asbestosis' [not true;].[37]

f) 'adenocarcinoma of the lung is not smoking related' [not true;[38])

g) 'large airway obstruction with emphysema is explained by asbestos inhalation' [no evidence for;].[39]

Regarding this pitfall, one attorney experienced in OLD litigation has written: "I have frequently witnessed occasions in which medical experts ignore or reject the published diagnostic standards and instead employ peculiar nomenclatures and diagnostic criteria in a regrettable litigation tactic calculated to confuse".[40] A good medical expert does not want to confuse anyone, least of all a jury hearing the case.

A smoker with COPD worked as a paint sprayer. He was treated in an emergency department on April 3 for COPD exacerbation, and released; he

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497-498 (1986); Cristina E. Mapp et al., *Persistent Asthma Due to Isocynates*, 137 AM. REV. RESP. DIS. 1326, 1328-1329 (1988); Jean-Luc Malo et al., *Patterns of Improvement in Spirometry, Bronchial Hyperresponsiveness and Specific IgE Antibody Levels After Cessation of Exposure in Occupational Asthma Caused by Snow-Crab Processing*, 138 AM. REV. RESP. DIS. 807, 810-811 (1988); Christian Allard et al., *Occupational Asthma Due to Various Agents*, 96 CHEST 1046, 1048 (1989). *See also* D.W. Cockcroft, *Airway Hyperresponsiveness*, 142 AM. REV. RESP. DIS. 497 (1990).

[34]Stuart M. Brooks et al., *Reactive Airways Dysfunction Syndrome (RADS)*, 88 CHEST 397 (1985), Susan M. Tarlo & Irvin Brader, *Irritant Induced Occupational Asthma*, 96 CHEST 297, 298 (1989).

[35]A. Kay, *Eosinophiles and Neutrophils in the Pathogenesis of Asthma*, in BRONCHIAL ASTHMA (E. Weiss et al. eds., 2nd ed. 1985).

[36]Roy Patterson et al., *Use of Immunologic Technology in the Diagnosis of Environmental and Occupational Immunologic Lung Disease*, 98 CHEST 206S, 207S (1990).

[37]American Thoracic Society, *The Diagnosis of Nonmalignant Diseases Related to Asbestos*, 134 AM. REV. RESP. DIS. 363 (1986).

[38]Ross C. Brownson, et al., *Risk Factors for Adenocarcinoma of the Lung*, 125 AM. J. EPIDEMIOL 25, 30 (1987).

[39]Churg, *supra*, note 13 at 412; Kaye H. Kilburn et al., *Airway Disease in Non-Smoking Asbestos Workers*, 40 ARCH. ENVIRON. HEALTH 293, 295 (1985); Yehuda Lerman et al., *Clinical Findings Among Asbestos Workers in the U.S.: Influence of Cigarette Smoking*, 10 AM. J. IND. MED. 449 (1986).

[40]Richman, *Compensating supra*, note 2 at 336.

returned to work the next day. A month later he learned that the paint he used in early April contained some cyanide compound. An attorney referred him to a physician, who ordered a cyanide blood level; it was 25 ng/ml, a value in the expected range for cigarette smokers. (Cyanide causes mild symptoms when the level is above 50 ng/ml; depressed level of consciousness begins at 100 ng/ml and death occurs above 300 ng/ml.)[41] At no time was there any documentation of shock, acidosis or cerebral hypoxia. All of the patient's symptoms were consistent with previously-documented COPD. Nonetheless, the physician wrote to the attorney that the patient "suffered an episode of acute cyanide toxicity on April 3, and now suffers from chronic low-level cyanide toxicity." Subsequently a claim was made in a civil suit for "acute and chronic cyanide toxicity." The case was ultimately dismissed.

N. Using sloppy or incorrect language, including misspelling

It is amazing how often physicians send out reports with obviously incorrect spelling, syntax, terminology and even the claimant's name. This type of mistake can weaken the physician's credibility and harm the side he or she is trying to help. The usual reason, I suspect, is that many physicians do not read over what they dictate or make no attempt to edit their report. A few examples I have encountered (the intended word is in brackets):

> "The patient has a long-standing history of tobaggism [tobaccoism]."
>
> "I believe it entirely impossible [possible] that it caused also an irreversible airway obstructive syndrome leading to the state now where she is a total pulmonary cripple."
>
> "After careful review of his records and noting the progressive nature of his/her [his] subjective symptoms . . ."
>
> "I evaluated Mr. Brown on October 14, 19—. . . Past medical history indicates that Mr. Jones [Mr. Brown] . . ."

O. Not saying "I don't know." when you don't

It is entirely proper to say there is not enough information, that the diagnosis is inconclusive, and let the chips fall where they may. If you find you need more information to reach a valid conclusion, hospital records, additional tests, etc., that determination should be stated in your report. It is better to be forthright and uncertain, than certain and wrong.

IV. DISCUSSION

In general, pitfalls in diagnosing OLD arise from one of two basic reasons: physician bias or inadequate evaluation. It would be naive to assume that bias does not play a role in what is inherently an adversarial situation. The "no-fault"

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[41] Hall A., Rumack BH, *Clinical Toxicology of Cyanide*, 15 ANNALS EMERGENCY MED., 1067, 1067-74 (1986).

nature of workers' compensation does not inhibit litigation, since the employer's Workers' Compensation premiums rise when a claim is sustained. As a result, many, if not most, occupational lung disease claims are contested.

Morgan (1995) has written: " . . in the U. S. at the present time an attempt is being made to relate virtually all naturally occurring disease to occupational exposure, and suits for all types of so-called occupational injury and illness are extremely common. The present system has done much to undermine the public's faith in the legal and medical professions, but since vast sums of money are involved, it is likely to persist at least for a time.[42]

Thus, in the present litigious climate, one could argue that many of the examples in this paper are not pitfalls at all, that they merely reflect purposeful misstatements, distortions or omissions. These statements are made to satisfy the hiring attorney's needs: either to turn a non-disease, or a non-occupational chronic disease, into an *occupational* condition; or to nullify a legitimate occupational condition. Such intentions are probably true some of the time, but more often, I think, these apparent pitfalls are unintended, and the consequences unwanted.

There is a lesson here for both physicians and attorneys. Should physicians assume the position of lawyers, able to take either side of a case and argue it in a way that is provably biased? I don't think so. Physicians should evaluate OLD objectively, no matter who is paying for the opinion. Such a position in no way obviates becoming a paid expert. Indeed, "when called upon on behalf of either defendants or plaintiffs, physicians have an obligation and a duty to participate in the justice system as expert witnesses."[43] The author has written reports and testified on behalf of both patients and companies, and, yes, has become trapped in a few pitfalls himself! The point is to evaluate each claim thoroughly and fairly, and not take a position against one's better medical judgment.

When colleagues in medicine question a diagnosis it is usually in a friendly context. Diagnosis of OLD is different. Inappropriate and unsupported claims can expect to be challenged, and when that happens even the most casual declarative statement will come under intense scrutiny.[44] Other physicians will likely be paid to argue against the diagnosis. The physician may be deposed, his or her background explored, credentials examined, integrity called into question. A physician who takes a medically incorrect or obviously biased stand can actually harm the side he is trying to help, especially if his testimony becomes discredited.

The best way for a physician to survive intense scrutiny is to anticipate it. If a physician is asked to review a case of possible OLD, the problem should be approached like a review for a medical journal or a medical grand rounds presentation. What are the facts? Is all the pertinent history included? What is

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[42]Morgan, *supra*, note 6.

[43]*ACCP Guidelines to Expert Witnesses*, 98 CHEST 1006 (1990).

[44]Richman, *Compensating supra*, note 2; Stephen I. Richman, *Legal Treatment of the Asthmatic Workers, A Major Problem for the Nineties*, 32 J. OCCUP. MED. 27 (1990).

supportable and what is not? Is the assessment consistent with what is currently published about the problem? What conclusion can be comfortably presented to colleagues in an open scientific forum?

Medicine is an art and legitimate controversies exist about many diagnoses, including OLD. The literature is replete with articles about the difficulty in attributing cancer to asbestos exposure[45] or silicosis;[46] in differentiating occupational from intrinsic asthma;[47] in deciding if asbestos is the cause of pleural thickening[48] or effusion.[49] Physicians live with uncertainty in both diagnosing and attributing causation in these and many other diseases. It is only in the legal world that physicians are asked to state a diagnosis (or its cause) as "more probable than not" and, if need be, swear to this statement under oath.

The fact that OLD also involves the legal profession should not affect one's objectivity or clinical approach. Physicians have an obligation to themselves and to the larger society to help assure that patients deserving compensation get it, and that claimants without a compensable occupational illness are not unjustly rewarded.

As for attorneys, they are paid to be advocates. Can they be faulted for relying on a physician's report in favor of the client, no matter how incorrect, sloppy or biased it may be? Yes, in one unarguable aspect: if the report ends up *hurting* the client, by involving him in a series of futile evaluations, depositions and court dates.

The author has seen, on numerous occasions, claimants put through unnecessary and expensive re-examinations because an attorney sought to justify a diagnosis initially made in a patently shoddy report by an unqualified physician. On many occasions clients have expressed dismay at the multiple series of chest x-rays, blood tests, and doctor visits requested of them, and opined they should never have started the process. I have also been involved in three cases that went to trial lasting, respectively, one day, one week, and two weeks, where there was not a shred of evidence to support any occupational diagnosis. All three cases were predicated on reports full of contradictions and incorrect statements, and the claimant lost in all three instances.

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[45]Cullen, *supra* note 18. *See also* Brooke T. Mossman & J. Bernard L. Gee, *Asbestos Related Diseases*, 320 NEW. ENG. J. MED. 1721 (1989).

[46]David F. Goldsmith et al., *Does Occupational Exposure to Silica Cause Lung Cancer?*, 3 AM. J. MED. 423 (1982); A.G. Heppleston, *Silica, Pneumoconiosis and Carcinoma of the Lung*, 7 AM. J. IND. MED. 285 (1985).

[47]Richman, *Change supra*, note 4; Moria Chan-Yeung, *Occupational and Environmental Lung Disease*, 93 CHEST 407 (1988).

[48]Linda Rosenstock, *The Plueral Manifestations of Asbestos Exposure*, in STATE OF THE ART REVIEWS: OCCUPATIONAL MEDICINE, 383-407 (1987).

[49]Gary R. Epler, *Prevalence and Incidence of Benign Asbestos Pleural Effusion in a Working Population*, 247 JAMA 617 (1982).

What is the attorney's obligation to his or her client? From a physician perspective, it seems that a smart attorney will know when the expert physician, hired to make a diagnosis, in fact weakens a case. No doubt this realization happens quite often, and many claims are dropped or settled quickly for a small amount. Yet some attorneys seem to drag their hapless claimants through the medical evaluation process, administrative and civil courts, in a futile attempt to justify a diagnosis without merit. An advocacy position so encumbered can trap not only the physician, but also the attorney and the claimant.